

AMENDMENTS TO THE SPECIFICATION

## ON PAGE 1

IN THE PARAGRAPH BEGINNING AT LINE 17 WITH THE WORDS “There are a variety ...” AND ENDING WITH THE WORDS “...into the thick film regime.” PLEASE AMEND THE SPECIFICATION WITH THE REPLACEMENT PARAGRAPH AS FOLLOWS:

There are a variety of applications for which thick film lithography can prove to be advantageous. For example, thick film lithography can be used to create plating molds to fashion small, high aspect ratio metal parts for micromechanical applications (e.g., LIGA), allow the semiconductor industry to extend the thickness of their bump technology, and provide for extension of thin film head manufacturers to extend their thickness regime. However, the photoresist compositions found to be generally useful for resist films thicker than 70  $\mu\text{m}$ , such as SU-8 (MicroChem Corp., Marlboro, MA), have disadvantageous ~~features~~features; namely, solvent development and the highly crosslinked epoxy can be difficult to strip from a substrate. Consequently, there are a good reasons to try to extend lithography as practiced by the semiconductor industry, i.e., thin film lithography, into the thick film regime.

## ON PAGE 2

IN THE PARAGRAPH BEGINNING IN LINE 1 WITH THE WORDS “Thin film lithography photoresists ...” AND ENDING WITH THE WORDS “...of 75  $\mu\text{m}$  or greater.” PLEASE AMEND THE SPECIFICATION WITH THE REPLACEMENT PARAGRAPH AS FOLLOWS:

Thin film lithography photoresists, such as positive working photoresists based on aqueous base soluble phenolic ~~resins~~resins, have gained popularity because of their superior resolution potential, one micron with state-of-the art processes, and better etch resistance. Diazonaphthoquinone/novolac (DNQ/novolac) is a positive working, multicomponent resist system consisting of a novolac resin prepared by the acid catalyzed co-polymerization of cresol and formaldehyde and a sensitizer, DNQ, which is base insoluble. Upon photolysis, DNQ produces a carbene which undergoes rearrangement to form a ketene. The ketene adds water, present in the resist film, to form a base soluble indene carboxylic acid photo-product.

DNQ/novolac resist systems are common in microcircuit manufacturing applications and consequently, there have been some attempts to extend the thickness and resolution capabilities of these materials to the thick film regime, film thicknesses of 75  $\mu\text{m}$  or greater.

ON PAGE 3 AND CONTINUING TO PAGE 4

IN THE PARAGRAPH BEGINNING WITH THE WORDS “Onium compounds or onium salts ...” AND ENDING WITH THE WORDS “...cholate is most particularly preferred.” PLEASE AMEND THE SPECIFICATION WITH THE REPLACEMENT PARAGRAPH AS FOLLOWS:

Onium compounds or onium salts refer to a family of iodonium, bromonium, chloronium or sulfonium compounds, typified by triarylsulfonium, diarylchloronium, diarylbromonium, diphenyliodoniumhexafluoroarsenate, and octyloxyphenylphenyl iodonium halide. Further examples are known to those skilled in the art. These compounds or salts are typified by the characteristic that upon photon absorption they undergo photolysis to generate a strong acid. The acid thus liberated catalyzes acidolysis or depolymerization. The hydroxy groups formed by the catalyzed acidolysis make the decomposed polymer soluble in alkaline solution, thereby differentiating it from unexposed and thus unreacted resist material. Since each acid produces a chain of events, the overall quantum efficiency is greatly amplified. Onium carboxylate salts can act as dissolution inhibitors. Preferred onium carboxylate ~~slats~~ salts are the onium cholate, onium lithocholate, onium deoxycholate, or onium salts of congeners of cholic acid. Of the onium cholates a preferred compound is the iodonium cholate. The alkyloxyphenylphenyl iodonium cholate is particularly preferred and the octyloxyphenylphenyl iodonium cholate is most particularly preferred.